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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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See Notification of Transmittal of International
Preliminary Examination Report (Form PCT/IPEA/416)

Applicant's or agent's file reference E-1719/03	FOR FURTHER ACTION	
International application No. PCT/IT 03/00371	International filing date (day/month/year) 13.06.2003	Priority date (day/month/year) 14.06.2002
International Patent Classification (IPC) or both national classification and IPC E05B65/12		
Applicant INTIER AUTOMOTIVE CLOSURES S.P.A.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.
 - This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:
 - I Basis of the opinion
 - II Priority
 - III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV Lack of unity of invention
 - V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI Certain documents cited
 - VII Certain defects in the international application
 - VIII Certain observations on the international application

Date of submission of the demand 09.01.2004	Date of completion of this report 02.11.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Westin, K Telephone No. +31 70 340-2635



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IT 03/00371

1. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1, 2, 4-40 as originally filed
3 received on 20.09.2004 with letter of 15.09.2004

Claims, Numbers

1-14 received on 20.09.2004 with letter of 15.09.2004

Drawings, Sheets

1/8-8/8 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No.

PCT/IT 03/00371

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-14
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IT 03/00371

Re Item V

- **Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2.1 Reference is made to the following documents:

D1: US 5 855 130 A,
D2: US 5 746 076 A,
D3: US 2001/356654 A.

2.2 The general aim of achieving a large number of lock functions with a single general lock construction described in the present application (p.2, §2 - p.3, §1) is also addressed in D3, §[0005].

2.3 Document D3 discloses a lock for a door of a motor vehicle comprising: - a closing mechanism 38,50 designed for coupling, in a releasable way, with a lock striker for bringing about closing of said door; - a mechanical actuating assembly of said closing mechanism, which comprises opening means 24,26 for controlling release of said closing mechanism from said lock striker (§[0056], §[0058]). There are furthermore means for inhibiting opening 76, that can be selectively activated for rendering said opening means ineffective (§[0070]-§[0073]) and electrical actuator means comprising two output members 172,194 interacting with said means for inhibiting opening (col.5, l.39-43). Furthermore, said electrical actuator means 10 are housed in a single casing 118) and said output members 172,196 traverse a through hole of said casing for cooperating with said means for inhibiting opening 76. The casing defines an area for housing a manual control device (see e.g. figure 7 and §[0062],§[0063]). Finally there is an additional electrical control device of the second output member, which provides a function of child safety locking (§[0091],§[0092]).

2.4 One of the features in claim 1 describes that the electric-actuator means are housed in a fluid-tight way in the casing and in that the output-members are traversing respective through holes in a fluid-tight way. In D1 a fluid-tight construction of the casing 118 does not appear to be explicitly mentioned. However, in D1 there are a number of implicit indications in the direction of a more or less sealed construction of the casing. From the figures (see e.g. figs. 3, 5, 7, 15, 17, 19) it seems highly probable that the two casing halves 120, 122 define a sealed housing with the electrical connector 138, the connection for a manual release device 124, and the output members 172,194 as the only entries/exits. It is thereby to be mentioned that the arrangement as for example in figure 8, where there appears to be an open space

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IT 03/00371

- between shaft 170 and casing 120, is due to the simplified structure where the second output shaft 192 has been omitted from the drawing. In reality the space between 170 and 120 would be filled by the second shaft 190.

2.5 Even if it would be argued that the construction in D3 is not to be seen as fluid-tight, it would be immediately obvious to provide the necessary sealing arrangements to the actuator casing 118 in order to achieve fluid-tightness.

2.6 The remaining feature of claim 1 distinguishing its subject-matter from an actuator according to D3 is that the output members traverse the casing in different through holes (claim 1, p.2, l.3, "further through hole").

2.7 The subject-matter of claim 1 is thus new (Article 33(2) PCT).

2.8 In D1 the output members are arranged in a coaxial manner. To replace this arrangement by output members exiting the casing in separate through holes appears to be a mere design option, especially since the present application does not seem to specify any clear, non-obvious advantages of this particular feature. It is also to be noted that this feature has no functional relationship with the fluid-tightness of the casing. It concerns two juxtaposed, non-related, features (see Guidelines 13.05).

2.9 Starting from a lock according to D3 the skilled person would consequently arrive at a lock according to claim 1 without inventive activity (Article 33(3) PCT).

2.10 The subject-matter of dependent claims 2-14 appears to be rendered obvious by the disclosures in documents D1-D2 and/or the general knowledge of the person skilled in the vehicle lock field.

20.09.2004

- 3 -

(96)

moreover comprise two or more electrical actuators, for example for controlling opening of the closing mechanism and for activating and deactivating the external-safety and internal-safety functions.

5 In order to obtain the said functions, it is obviously necessary for the lock to be equipped with electrical components for signalling and control, for instance, microswitches, as well as electrical-connection components.

10 Since, as has been pointed out previously, in order to be able to interact with the lock striker, the locks described are normally positioned inside the damp region of the compartment in the door, it is necessary to adopt a whole series of precautions in order to prevent
15 contact of the locks with water from possibly jeopardizing their operation, such as, for example, the use of water-tight electrical components and actuators, which are decidedly more costly than similar components and actuators for which impermeability to water is not
20 required.

<-> DISCLOSURE OF INVENTION

A purpose of the present invention is to provide a lock for a door of a motor vehicle, which will enable the drawback referred to above to be overcome in a
25 simple and inexpensive way.

A further purpose of the present invention is to
<US 5,855,130 discloses a motor vehicle door lock as defined
in the preamble of claim 1.>

- 41 -

EPO - DG 1

20.09.2004

CLAIMS

(96)

1. A lock (1, 1') for a door of a motor vehicle comprising:

5 a closing mechanism (3) designed for coupling, in a releasable way, with a lock striker (2) for bringing about closing of said door;

10 a mechanical actuating assembly (4) of said closing mechanism (3), which comprises opening means (30, 38, 55, 57), for controlling release of said closing mechanism (3) from said lock striker (2), and means for inhibiting opening (41, 58), in turn including a first safety member (41) and a second safety member (58), that can be selectively activated for rendering said opening means (30, 38, 55, 57) ineffective, respectively, from outside and from inside the motor vehicle; and

15 electric-actuator means (5) comprising a first output member (71) coupled with said first safety member (41);

20 said electric-actuator means (5) being housed in a fluid-tight way in a single casing (70) and said first output member (71) traversing, in a fluid-tight way, a through hole (73) of said casing (70) for co-operating with said first safety member (41);

25 characterized in that said electric-actuator means (5) comprise a second output member (72) coupled with

- 42 -

said second safety member (58), housed in a fluid-tight way in said casing (70) and traversing in a fluid-tight way a further through hole (74) of said casing (70); and in that said casing (70) defines an area (70a) for 5 housing a manual control device (82, 156) of said first output member (71) and an additional electrical control device (155) of said second output member (72), which provides a function of child safety of said lock.

2. The lock as claimed in claim 1, characterized in 10 that said casing (70) comprises at least two elements (77, 78), which can be coupled together with interposition of first sealing means (81).

3. The lock as claimed in claim 2, characterized in that said first sealing means (81) comprise a gasket 15 (81) co-moulded on a perimetral portion (79) of one (77) of said elements (77, 78).

4. The lock as claimed in claim 2 or 3, characterized in that said holes (73, 74) are made entirely on one (77) of said elements (77, 78) and house 20 respective seal rings (103) co-operating with said output members (71, 72).

5. The lock as claimed in any one of the foregoing claims, characterized in that each of said first and second safety member (41, 58) interacts with said 25 opening means (30, 38, 55, 57) and is displaceable along a pre-set direction between a disabling configuration,

- 43 -

in which it renders said opening means (30, 38, 55, 57) ineffective and an enabling configuration, in which it enables actuation of said closing mechanism (3) by said opening means (30, 38, 55, 57), and in that each of said
5 first and second output member (71, 72) is provided with a rotational motion about an axis (E, F) of its own, which is transverse to the direction of displacement of the first and second safety member (41, 58) and is provided, in a position corresponding to an external end
10 (110, 111) of its own projecting from said casing (70), with a portion (75, 76) for interaction with the relative safety member (41, 58), said interaction portion (75, 76) being eccentric with respect to said axis (E, F).

15 6. The lock as claimed in claim 5, characterized in that said interaction portion (75, 76) is fixed to an end element (114, 115) coupled in an axially fixed position and in an axially mobile way on said external end (110, 111) of the relative output member (71, 72)
20 and is kept in a pre-set angular position on the external end (110, 111) by said elastic means (116, 117).

25 7. The lock as claimed in claim 5 or 6, characterized in that said interaction portion is a pin (75, 76) engaged with a through hole (53, 67) of the relative said safety member (41, 58).

- 44 -

8. The lock as claimed in any one of the foregoing claims, characterized in that said opening means comprise a first actuating mechanism (31) and a second actuating mechanism (32), which can be connected, respectively, to an external handle and an internal handle of said door for controlling release of said closing mechanism (3) from said lock striker (2) respectively from outside and from inside the motor vehicle, said first and second safety member (41, 58) being respectively available in a corresponding said disabling configuration for rendering the respective said first actuating mechanism (31) and said second actuating mechanism (32) ineffective, providing, respectively, an external-safety function and an internal-safety function.

9. The lock as claimed in any one of the foregoing claims, characterized in that said first and second output members (71, 72) have parallel axes (E, F) and are actuated by respective electrical control devices (87, 88).

10. The lock as claimed in any one of the foregoing claims, characterized in that said housing area (70a) of said casing (70) is set on one opposite side of said second output member (72) with respect to said first output member (71), and in that said second output member (72) carries a first attachment element (167),

which can be connected to said additional electrical control device (155), and a second attachment element (133) which can be connected to said manual-control device (82, 156), said first attachment element (167) being angularly mobile with respect to said second output member (72) and said second attachment element (133) being angularly mobile with respect to said second output member (72) and angularly coupled with said first output member (71).

10 11. The lock as claimed in any one of the foregoing claims, characterized in that said casing (70) integrally defines an insulating body (149) of an electrical connector (148) for connection of said electric-actuator means (5) with an electrical wiring system of the motor vehicle.

12. The lock as claimed in claim 12, characterized in that said casing (70) houses a plurality of warning elements (143, 144, 145, 146, 173) for signalling the operating condition of components of said first lock (1, 1'), and an electrical circuit (147) for connection of said electric-actuator means (5) and said warning elements (143, 144, 145, 146, 173) with said electrical connector (148).

13. The lock as claimed in claim 12, characterized in that said warning elements comprise a plurality of microswitches (143, 144, 145, 146, 173), each of which

- 46 -

has an insulating portion (154) fixed to said casing (70) and electrical-connection means (150) for connection to said electrical circuit (147) projecting from said insulating portion (154) and embedded in a
5 resin.

14. The lock as claimed in claim 12 or 13, characterized in that said electrical circuit (147) comprises a plurality of conductive paths (152) carried by a flexible support made of insulating material (153)
10 fixed to said casing (70).